UNVEILING THE NEXUS: INVESTIGATING ORGANISATIONAL CULTURE, EXTERNAL FACTORS, AND INTERNAL RESOURCES IN AI ADOPTION AMONG SMES IN DELHI-NCR

Abhay Jain*

*Assistant Professor,
Ibmr Group Of Institutions,
Gurgaon, Haryana, INDIA
Orchid id- 0009-0009-3264-0292
Email id- Abhayjaind352@Outlook.Com

ABSTR ACT

Organisational culture (OC) is a crucial factor that every organisation must address in order to thrive in the digital economy. The present study investigates the crucial drivers employing OC, external factors (EF), and organisational internal resources (OR) in adopting artificial intelligence tools by Delhi-NCR small and medium-sized businesses. Extensive scholarly literature forms the foundation of the study's conceptual framework. The study adopts a research philosophy rooted in positivism and utilises a deductive approach to investigate the relationship. The research strategy employed is survey-based. Utilising a straightforward method of random sampling to encompass a diverse range of industries and businesses. The study collected data from 196 SME owner-managers in order to examine the representable factors of the entire Delhi-NCR SMEs that influence their success or failure to adopt AI. We conducted the analysis using Smart-PLS 4 to evaluate the relationship between the endogenous and exogenous variables in the measurement and structural model. The study's findings indicate that OR, OC, and EF have a significant positive influence on AI adoption. This suggests that SMEs can improve their AI outcomes by enhancing their OR, OC, and EF processes. These findings can assist decision-making and resource allocation by emphasising the significance of critical factors in promoting Al outcomes and identifying areas where efforts may not yield desired results. According to the study, a key factor contributing to the limited adoption of AI among SMEs is the absence of support from top management. The study findings will provide valuable insights for policymakers and institutional chambers regarding the role of OC, OR, and EC in information system adoption. These insights can help inform the development of policies that take these important connections into account. Finally, the findings would enhance the understanding of the literature by presenting empirical evidence from the SMEs of Delhi-NCR, India.

REFERENCES

Aboelmaged, M. G. (2014). Predicting e-readiness at firm-level: An analysis of technological, organizational and environmental (TOE) effects on e-maintenance readiness in manufacturing firms. *International Journal of Information Management*, *34*(5), 639-651.

Abuselidze, G., &Mamaladze, L. (2021, March). The impact of artificial intelligence on employment before and during pandemic: A comparative analysis. In *Journal of Physics: Conference Series* (Vol. 1840, No. 1, p. 012040). IOP Publishing.

Acharya, A., Singh, S. K., Pereira, V., & Singh, P. (2018). Big data, knowledge co-creation and decision making in fashion industry. *International Journal of Information Management*, *42*, 90-101.

Ali Abbasi, G., Abdul Rahim, N. F., Wu, H., Iranmanesh, M., &Keong, B. N. C. (2022). Determinants of SME's social media marketing adoption: competitive industry as a moderator. *Sage Open*, *12*(1), 21582440211067220.

Ambad, S. N. A., Andrew, J. V., & Awang Amit, D. H. D. (2020). Growth challenges of SMEs: empirical evidence in Sabah, Malaysia. *ASEAN Entrepreneurship Journal (AEJ)*, *6*(1), 8-14.

Baabdullah, A. M., Alalwan, A. A., Slade, E. L., Raman, R., &Khatatneh, K. F. (2021). SMEs and artificial intelligence (AI): Antecedents and consequences of AI-based B2B practices. *Industrial Marketing Management*, *98*, 255-270.

Battistoni, E., Gitto, S., Murgia, G., &Campisi, D. (2023). Adoption paths of digital transformation in manufacturing SME. *International Journal of Production Economics*, *255*, 108675.

Boddu, R. S. K., Santoki, A. A., Khurana, S., Koli, P. V., Rai, R., & Agrawal, A. (2022). An analysis to understand the role of machine learning, robotics and artificial intelligence in digital marketing. *Materials Today: Proceedings*, *56*, 2288-2292.

Budhwar, P., Malik, A., De Silva, M. T., &Thevisuthan, P. (2022). Artificial intelligence– challenges and opportunities for international HRM: a review and research agenda. *The International Journal of Human Resource Management*, *33*(6), 1065-1097.

Bughin, J. (2020). Artificial Intelligence, Its Corporate Use and How It Will Affect the Future of Work. In *Capitalism, Global Change and Sustainable Development* (pp. 239-260). Springer International Publishing.

Campbell, C., Sands, S., Ferraro, C., Tsao, H. Y. J., &Mavrommatis, A. (2020). From data to action: How marketers can leverage AI. *Business horizons*, *63*(2), 227-243.

Chatterjee, S., Nguyen, B., Ghosh, S. K., Bhattacharjee, K. K., & Chaudhuri, S. (2020). Adoption of artificial intelligence integrated CRM system: an empirical study of Indian organizations. *The Bottom Line*, *33*(4), 359-375.

Chaudhry, I. S., Paquibut, R. Y., &Chabchoub, H. (2022, November). Factors Influencing Employees Trust in AI & its Adoption at Work: Evidence from United Arab Emirates. In *2022 International Arab Conference on Information Technology (ACIT)* (pp. 1-7). IEEE.

Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2023). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 1-39.

Dabbous, A., Aoun Barakat, K., &Merhej Sayegh, M. (2022). Enabling organizational use of artificial intelligence: an employee perspective. *Journal of Asia Business Studies*, *16*(2), 245-266.

Damanpour, F. (2018). Organizational innovation: A meta-analysis of effects of determinants and moderators. In *Organizational Innovation* (pp. 127-162). Routledge.

Daoud, L., Marei, A., Al-Jabaly, S., &Aldaas, A. (2021). Moderating the role of top management commitment in usage of computer-assisted auditing techniques. *Accounting*, *7*(2), 457-468.

Davenport, T., Guha, A., Grewal, D., &Bressgott, T. (2020). How artificial intelligence will change the future of marketing. Journal of the Academy of Marketing Science, 48(1), 24–42. https://doi.org/10.1007/s11747-019-00696-0

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

De Vasconcelos, J. B., & Rocha, Á. (2019). Business analytics and big data. *International Journal of Information Management*, *46*(C), 320-321.

Deepu, T. S., & Ravi, V. (2021). Exploring critical success factors influencing adoption of digital twin and physical internet in electronics industry using grey-DEMATEL approach. *Digital Business*, *1*(2), 100009.

DeStefano, T. J., Teodorovicz, T., Cho, J., Kim, H., & Paik, J. (2022). What Determines AI Adoption?. In *Academy of Management Proceedings* (Vol. 2022, No. 1, p. 14791). Briarcliff Manor, NY 10510: Academy of Management.

Dey, P. K., Chowdhury, S., Abadie, A., Vann Yaroson, E., & Sarkar, S. (2023). Artificial intelligence-driven supply chain resilience in Vietnamese manufacturing small-and medium-sized enterprises. *International Journal of Production Research*, 1-40.

Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., Hazen, B. T., &Roubaud, D. (2018). Examining top management commitment to TQM diffusion using institutional and upper echelon theories. *International Journal of Production Research*, *56*(8), 2988-3006.

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, *57*, 101994.

Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.

Fernandes, J., et al. (2013). Designing and implementing collaborative networks: A case study. *Expert Systems with Applications*, 40(6), 1883-1895.

Flavián, C., Pérez-Rueda, A., Belanche, D., &Casaló, L. V. (2022). Intention to use analytical artificial intelligence (AI) in services–the effect of technology readiness and awareness. *Journal of Service Management*, *33*(2), 293-320.

Forbes Advisor (2023). MSME Statistics of 2024. Available at: https://www.forbes.com/advisor/in/business/msme-statistics/

Fornell, C., &Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.

Fountaine, T., McCarthy, B., & Saleh, T. (2019). Building the AI-powered organization. *Harvard Business Review*, *97*(4), 62-73.

Franke, G., &Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: a comparison of four procedures. *Internet Research*, *29*(3), 430-447.

Furuholt, B., &Ørvik, T. U. (2006). Implementation of information technology in Africa: Understanding and explaining the results of ten years of implementation effort in a Tanzanian organization. *Information Technology for Development*, *12*(1), 45-62.

Gans, J. S. (2023). Artificial intelligence adoption in a competitive market. *Economica*, *90*(358), 690-705.

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of management information systems*, *18*(1), 185-214.

Gonçalves, M. J. A., da Silva, A. C. F., & Ferreira, C. G. (2022, February). The future of accounting: how will digital transformation impact the sector?. In *Informatics* (Vol. 9, No. 1, p. 19). MDPI.

Hair, J. F., Hult, G. T. M., Ringle, C. M., &Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks. *Sage*, 165.

Hair, J.F., Risher, J., Sarstedt, M. and Ringle, C.M. (2018), "When to use and how to report the results of PLS-SEM", European Business Review, Vol. 31 No. 1, pp. 2-24.

Hair, Joseph F, Black, W. C., Babin, B. J., & Anderson, R. E. (2016). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hair, Joseph F, Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hansen, E. B., &Bøgh, S. (2021). Artificial intelligence and internet of things in small and medium-sized enterprises: A survey. *Journal of Manufacturing Systems*, *58*, 362-372.

Hashim, N., Samsuri, A. S., & Idris, N. H. (2021). Assessing Organisations' Readiness for Technological Changes in Construction Industry. *International Journal of Sustainable Construction Engineering and Technology*, *12*(1), 130-139.

Hashimy, L., Jain, G., &Grifell-Tatjé, E. (2023). Determinants of blockchain adoption as decentralized business model by Spanish firms–an innovation theory perspective. *Industrial Management & Data Systems*, *123*(1), 204-228.

Henseler, J., Ringle, C. M., &Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, *43*, 115-135.

Horani, O. M., Al-Adwan, A. S., Yaseen, H., Hmoud, H., Al-Rahmi, W. M., &Alkhalifah, A. (2023). The critical determinants impacting artificial intelligence adoption at the organizational level. *Information Development*, 02666669231166889.

Hradecky, D., Kennell, J., Cai, W., & Davidson, R. (2022). Organizational readiness to adopt artificial intelligence in the exhibition sector in Western Europe. *International journal of information management*, *65*, 102497.

Indriastuti, D., &Fachrunnisa, O. (2021). Achieving organizational change: Preparing individuals to change and their impact on performance. *Public Organization Review*, *21*, 377-391.

Ingalagi, S. S., Mutkekar, R. R., & Kulkarni, P. M. (2021). Artificial Intelligence (AI) adaptation: Analysis of determinants among Small to Medium-sized Enterprises (SME's). In *IOP Conference Series: Materials Science and Engineering* (Vol. 1049, No. 1, p. 012017). IOP Publishing.

Jaganathan, M., Ahmad, S., Ishak, K. A., Nafi, S. N. M., &Uthamaputhran, L. (2018). Determinants for ICT adoption and problems: Evidence from rural based small and medium enterprises in Malaysia. *International Journal of Entrepreneurship*, *22*(4), 1-13.

Jayashree, S., Reza, M. N. H., Malarvizhi, C. A. N., & Mohiuddin, M. (2021). Industry 4.0 implementation and Triple Bottom Line sustainability: An empirical study on small and medium manufacturing firms. *Heliyon*, *7*(8).

Jöhnk, J., Weißert, M., &Wyrtki, K. (2021). Ready or not, AI comes—an interview study of organizational AI readiness factors. *Business & Information Systems Engineering*, *63*, 5-20.

Joiner, I. A. (2018). *Emerging library technologies: it's not just for geeks*. Chandos Publishing.

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly,* 14(4-5), 525-544.

Kagumba, F. G., &Wausi, A. N. (2018). The influence of organizational culture on the adoption of ICT innovation following technological disruption: Evidence from Kenyan ICT SMEs. *International Journal of Advances in Scientific Research and Engineering (ijasre)*, *4*(1), 21-33.

Khan, G.F., Sarstedt, M., Shiau, W.-L., Hair, J.F., Ringle, C.M. and Fritze, M.P. (2019), "Methodological research on partial least squares structural equation modeling (PLS-SEM): an analysis based on social network approaches", Internet Research, Vol. 29 No. 3, pp. 407-429.

Khan, N. A., Khan, A. N., Bahadur, W., & Ali, M. (2021). Mobile payment adoption: a multi-theory model, multi-method approach and multi-country study. *International Journal of Mobile Communications*, *19*(4), 467-491.

Kumar, V., Ramachandran, D., & Kumar, B. (2021). Influence of new-age technologies on marketing: A research agenda. *Journal of Business Research*, *125*, 864-877.

Lada, S., Chekima, B., Karim, M. R. A., Fabeil, N. F., Ayub, M. S., Amirul, S. M., ... and Zaki, H. O. (2023). Determining factors related to artificial intelligence (AI) adoption among Malaysia's small and medium-sized businesses. *Journal of Open Innovation: Technology, Market, and Complexity*, *9*(4), 100144.

Lemos, S. I., Ferreira, F. A., Zopounidis, C., Galariotis, E., & Ferreira, N. C. (2022). Artificial intelligence and change management in small and medium-sized enterprises: an analysis of dynamics within adaptation initiatives. *Annals of Operations Research*, 1-27.

Ma, L., & Sun, B. (2020). Machine learning and AI in marketing–Connecting computing power to human insights. *International Journal of Research in Marketing*, *37*(3), 481-504.

Maroufkhani, P., Tseng, M. L., Iranmanesh, M., Ismail, W. K. W., and Khalid, H. (2020). Big data analytics adoption: Determinants and performances among small to medium-sized enterprises. *International journal of information management*, *54*, 102190

Mayer, R. C., Davis, J. H., &Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of management review*, *20*(3), 709-734.

McDougall, N., Wagner, B., &MacBryde, J. (2022). Competitive benefits & incentivisation at internal, supply chain & societal level circular operations in UK agri-food SMEs. *Journal of Business Research*, *144*, 1149-1162.

Mikalef, P., Islam, N., Parida, V., Singh, H., &Altwaijry, N. (2023). Artificial intelligence (AI) competencies for organizational performance: A B2B marketing capabilities perspective. *Journal of Business Research*, *164*, 113998.

Ministry of Micro, Small and Medium Enterprises (2024). MSME DASHBOARD. Available at: https://dashboard.msme.gov.in/udyam_dist_wise.aspx?stid=7

Mokhtar, S. S. M., &Salimon, M. G. (2022). SMEs' Adoption of Artificial Intelligence-Chatbots for Marketing Communication: A Conceptual Framework for an Emerging Economy. In *Marketing Communications and Brand Development in Emerging Markets Volume II: Insights for a Changing World* (pp. 25-53). Cham: Springer International Publishing.

Moradi, M., &Dass, M. (2022). Applications of artificial intelligence in B2B marketing: Challenges and future directions. *Industrial Marketing Management*, *107*, 300-314.

Müller, O., Fay, M., &VomBrocke, J. (2018). The effect of big data and analytics on firm performance: An econometric analysis considering industry characteristics. *Journal of Management Information Systems*, *35*(2), 488-509.

OECD. (2021). Artificial Intelligence, Machine Learning and Big Data in Finance: Opportunities, Challenges, and Implications for Policy Makers. OECD Business and Finance Outlook 2020 : Sustainable and Resilient Finance., 1–72. Available at: https://www.oecd.org/finance/financialmarkets/Artificial-intelligence-machine-learning-big-data-in-finance.pdf

Omrani, N., Rejeb, N., Maalaoui, A., Dabić, M., & Kraus, S. (2022). Drivers of digital transformation in SMEs. *IEEE Transactions on Engineering Management*.

Oz, E., &Sosik, J. J. (2000). Why information systems projects are abandoned: a leadership and communication theory and exploratory study. *Journal of Computer Information Systems*, *41*(1), 66-78.

Park, J. H., & Kim, Y. B. (2021). Factors activating big data adoption by Korean firms. *Journal of Computer Information Systems*, *61*(3), 285-293.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, *88*(5), 879.

Polas, M. R. H., Jahanshahi, A. A., Kabir, A. I., Sohel-Uz-Zaman, A. S. M., Osman, A. R., & Karim, R. (2022). Artificial intelligence, blockchain technology, and risk-taking behavior in the 4.0 IR Metaverse Era: evidence from Bangladesh-based SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3), 168.

Premkumar, G., & Roberts, M. (1999). Adoption of new information technologies in rural small businesses. *Omega*, *27*(4), 467-484.

Press Information Bureau (2023). Ministry of Micro Small and Medium Enterprises. Available at: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1985020

Ragazou, K., Passas, I., Garefalakis, A., &Zopounidis, C. (2023). Business intelligence model empowering SMEs to make better decisions and enhance their competitive advantage. *Discover Analytics*, *1*(1), 2.

Rawashdeh, A., Bakhit, M., &Abaalkhail, L. (2023). Determinants of artificial intelligence adoption in SMEs: The mediating role of accounting automation. *International Journal of Data and Network Science*, *7*(1), 25-34.

Rogers, E. M. (2003). Diffusion of innovations, 5th edn London. *UK: Free Press.[Google Scholar]*.

Rosa, A., Bento, T., Pereira, L., Costa, R. L. D., Dias, Á., & Gonçalves, R. (2022). Gaining competitive advantage through artificial intelligence adoption. *International Journal of Electronic Business*, *17*(4), 386-406.

Rosa, I. S., Liliawati, W., Efendi, R., Ingalagi, S. S., Mutkekar, R. R., & Kulkarni, P. M. (2021). Artificial Intelligence (AI) adaptation: Analysis of determinants among Small to Mediumsized Enterprises (SME's). IOP Conference Series: Materials Science and Engineering, 1049(1), 012017. https://doi.org/10.1088/1757-899X/1049/1/012017

Sarstedt, M., Ringle, C.M. and Hair, J.F. (2017), "Partial least squares structural equation modeling", in Homburg, C., Klarmann, M. and Vomberg, A. (Eds), Handbook of Market Research, Springer International Publishing, Chams, pp. 1-40.

Sarstedt, M., Hair Jr, J. F., Cheah, J. H., Becker, J. M., &Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian marketing journal*, *27*(3), 197-211.

Savola, T., Tuohimaa, T., & Berg, S. (2018). AI-Enhanced Marketing Management–Factors Influencing Adoption in SMEs.

Schoeman, F., & Seymour, L. F. (2022, July). Understanding the Low Adoption of AI in South African Medium Sized Organisations. In *Proceedings of 43rd Conference of the South African Insti* (Vol. 85, pp. 257-269).

Sharma, S., Singh, G., Islam, N., &Dhir, A. (2022). Why do smes adopt artificial intelligence-based chatbots?. *IEEE Transactions on Engineering Management*.

Sjödin, D., Parida, V., Palmié, M., &Wincent, J. (2021). How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops. *Journal of Business Research*, *134*, 574-587.

Soltani, E. (2005). Top management: A threat or an opportunity to TQM?. *Total Quality Management & Business Excellence*, *16*(4), 463-476.

Teo, T. S. H. (2019). The impact of government support, institutions, and regulations on e-commerce adoption in developing countries. Information Systems Frontiers, 21(6), 1381-1395

Trường, T. N. X. (2022). Adopting digital transformation in small and medium enterprises: An empirical model of Influencing factorsbased on TOE-TAM integrated. *TạpchíNghiêncứuTàichính-Marketing*, 45-57.

Ulrich, P., & Frank, V. (2021). Relevance and adoption of AI technologies in German SMEs– results from survey-based research. *Procedia Computer Science*, *192*, 2152-2159.

Valtiner, D., &Reidl, C. (2021). On change management in the age of artificial intelligence: a sustainable approach to overcome problems in adapting to a disruptive, technological transformation. *Journal of Advanced Management Science Vol*, *9*(3).

Volkmar, G., Fischer, P. M., & Reinecke, S. (2022). Artificial Intelligence and Machine Learning: Exploring drivers, barriers, and future developments in marketing management. *Journal of business research*, *149*, 599-614.

Wei, R., & Pardo, C. (2022). Artificial intelligence and SMEs: How can B2B SMEs leverage AI platforms to integrate AI technologies?. *Industrial Marketing Management*, *107*, 466-483.

Willaby, H.W., Costa, D.S.J., Burns, B.D., McCann, C. and Roberts, R.D. (2015),   "Testing complex models with small sample sizes: a historical overview and empirical demonstration of what partial least squares (PLS) can offer differential psychology", Personality and Individual Differences, Vol. 84, pp. 73-78.

Wu, Q., Yan, D., & Umair, M. (2023). Assessing the role of competitive intelligence and practices of dynamic capabilities in business accommodation of SMEs. *Economic Analysis and Policy*, *77*, 1103-1114.

Xu, Y., Liu, X., Cao, X., Huang, C., Liu, E., Qian, S., ... & Zhang, J. (2021). Artificial intelligence: A powerful paradigm for scientific research. *The Innovation*, *2*(4).

Zhang, H., et al. (2019). Cultivating innovative behavior in firms: The role of top management transformational leadership, organizational culture, and climate for creativity. *Journal of Business Research*, 97, 37-46.

Yaqoob, I., Hashem, I. A. T., Gani, A., Mokhtar, S., Ahmed, E., Anuar, N. B., &Vasilakos, A. V. (2016). Big data: From beginning to future. *International Journal of Information Management*, *36*(6), 1231-1247.